

Cytotoxicity of betel quid and areca nut aqueous extracts on mouse fibroblast and mouth-ordinary-epithelium 1 cell lines

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Abstract

Betel quid chewing is a traditional habit associated with oral cancer. The composition of betel quid varies, but typically consists of areca nut and slaked lime wrapped in betel leaf. Although betel quid is associated with oral cancer, its role in the initiation and promotion stages of carcinogenesis is not fully clear. This study aims to investigate the cytotoxicity of crude betel quid and areca nut aqueous extracts on mouse fibroblast (L929) and mouth-ordinary-epithelium 1 (MOE1) cell lines. Selected concentrations of betel quid and areca nut (0.1 g/ml, 0.2 g/ml, 0.4 g/ml) were used in the study. Cytotoxicity analysis using MTT assay was performed in triplicates, whereby L929 and MOE1 were treated with each of the extract for 24 hours, 48 hours, and 72 hours respectively. The results were analysed using one-way ANOVA with Scheffe and Games-Howell Post hoc test and Kruskal Wallis complemented by Mann Whitney U-test for comparison of means at $p < 0.05$. Both betel quid and areca nut extracts at all concentrations significantly resulted in reduced cell viability against L929, in comparison to the control. In betel quid and areca nut-treated MOE1, betel quid at all concentrations significantly resulted in increased cell viability, in comparison to the control, whereas areca nut at the highest concentration significantly resulted in reduced cell viability of MOE1 compared to control group at 48 hours and 72 hours incubation period.

Keywords: Areca nut; betel quid; cytotoxicity; L929; MOE1; oral cancer

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